

**TRENTON**

**water pollution  
control plant**

**1968**

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ONTARIO WATER RESOURCES COMMISSION

Division of Plant Operations

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*Water management in Ontario*

Ontario  
Water Resources  
Commission

135 St. Clair Ave. W.  
Toronto 7  
Ontario

We are pleased to present you with the Operating Summary for the water pollution control facilities operated for you during 1968.

Both the financial and technical information presented should be of assistance to your present and future planning in this important phase of municipal activity.

A new format has been devised to allow greater readability with equally detailed content. We trust that this will meet with your approval.

Our staff wish to express their appreciation for your co-operation throughout the year.



D. S. Caverly,  
General Manager.



D. A. McTavish, P. Eng.,  
Director,  
Division of Plant Operations.

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**TRENTON**  
**water pollution control plant**

operated for  
**THE TOWN OF TRENTON**  
by the  
**ONTARIO WATER RESOURCES COMMISSION**

**1968 ANNUAL OPERATING SUMMARY**

## FOREWORD

● This operating summary outlines the project's technical capabilities and financial status in 1968. Such information mirrors past and present performance, but a major intention is to anticipate the future -- to solve problems before they occur.

The new format in which this year's data are presented is designed to offer a higher level of readability than in the past, without a corresponding decrease in compactness, accuracy and detail.

Although your Regional Operations Engineer carries the major responsibility for the contents of the report, those involved in its preparation are attached to several Commission sections and divisions. The statistics section of the Division of Plant Operations compiled the information for the graphs and charts. The draughting section of the Division of Sanitary Engineering drew the graphs. The Division of Finance provided all cost data.

Only the close co-operation of these departments allowed the publication of this summary.

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## **'68 REVIEW**

The operating cost for the year was \$26,431.67 an increase of \$3,917.59 from the 1967 operating cost of \$22,513.98. The unit cost of treating one million gallons in 1968 was \$56.61. The unit cost of treating one million gallons in 1967 was \$55.55.

In 1968, the plant treated an average flow of 1.28 mgd, 128 percent of the design capacity of one mgd. The design flow was exceeded 88 percent of the time during the year.

The average BOD and suspended solids in the plant effluent were 175 and 47 mg/l respectively. In 1967 the BOD and suspended solids in the effluent were 105 and 69 mg/l respectively. The average raw sewage strength was 331 mg/l BOD and 202 mg/l suspended solids, an increase from the 1967 raw sewage concentrations of 289 mg/l BOD and 278 mg/l suspended solids.

The reduction of BOD and suspended solids was 47% for each. In 1967, the percent reduction of BOD and suspended solids were 64 and 71.

Two pumps were rebuilt. The sludge recirculating pump required a new shaft, while the No. 1 raw sludge pump acquired new flanges and a new shaft.

The mechanical seal on the gas compressor wore out and was replaced after considerable time and difficulty. In December, 1967, one of the Rootes-Connersville blowers seized, and was replaced with a new unit. The repair of the old unit would have cost as much as the new unit.

The Dundas Street pumping station was thoroughly cleaned and painted. Considerable painting was also done in the plant control building. This has greatly improved the appearance of both buildings. Deterioration of the brickwork on the digester was severe. Repairs will be required in 1969.

## PROJECT COSTS

NET CAPITAL COST (Final) Long Term Debt to OWRC	<u>\$515,665.11</u>
Debt Retirement Balance at Credit (Sinking Fund) December 31, 1968	<u>\$120,346.23</u>
Net Operating	\$ 26,431.57
Debt Retirement	10,406.00
Reserve	1,958.10
Interest Charged	<u>28,951.21</u>
TOTAL	<u>\$ 67,746.88</u>

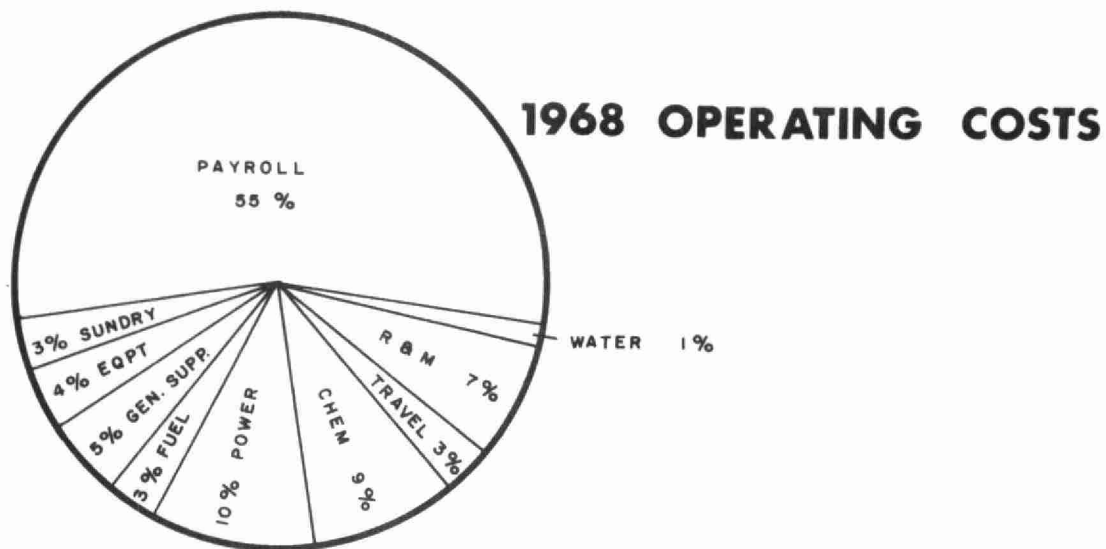
### RESERVE ACCOUNT

Balance at January 1, 1968	\$ 31,122.24
Deposited by Municipality	1,958.10
Interest Earned	1,882.82
	<u>          </u>
	\$ 34,963.16
Less Expenditures	<u>918.40</u>
Balance at December 31, 1968	<u>\$ 34,044.76</u>

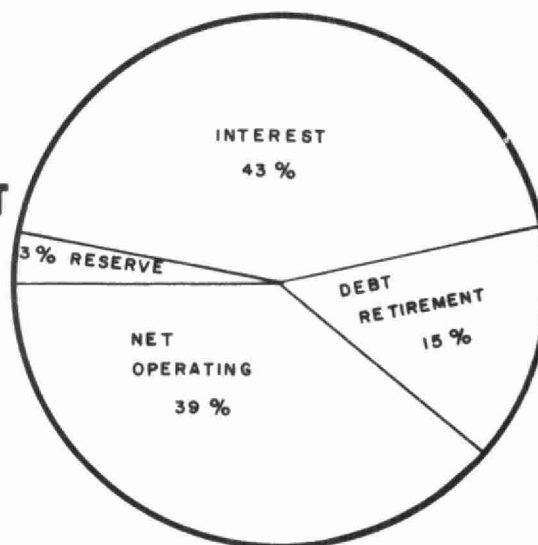


## Monthly Operating Costs

MONTH	TOTAL EXPENDITURE	PAYROLL	CASUAL PAYROLL	FUEL	POWER	CHEMICAL	GENERAL SUPPLIES	EQUIPMENT	REPAIRS & MAINTENANCE	SUNDRY	WATER	TRAVEL
JAN	1948.34	824.62	207.61	-	-	37.54	-	-	826.73	14.18	-	37.66
FEB	2376.40	769.31	191.58	203.14	228.75	477.23	313.20	89.19	36.08	15.74	15.85	36.33
MAR	2129.44	726.39	456.84	147.89	242.69	-	109.40	217.00	127.00	50.73	8.73	42.77
APRIL	2601.41	1026.67	420.62	176.62	182.75	477.23	110.05	15.60	56.12	-	62.11	73.64
MAY	2161.87	326.31	374.81	90.90	226.26	-	68.66	44.55	19.21	34.88	32.96	43.33
JUNE	1324.79	425.16	365.64	-	196.83	-	81.68	-	164.30	5.25	13.48	72.45
JULY	1849.90	269.78	430.51	-	213.35	477.23	43.37	163.41	72.30	76.83	19.89	83.23
AUG	1436.93	570.27	550.76	-	-	-	101.46	150.92	-	15.76	1.56	46.20
SEPT	1729.99	678.95	365.64	-	471.25	-	37.18	-	93.93	12.92	27.07	43.05
OCT	2096.44	746.81	365.64	-	-	477.23	91.48	321.00	-	26.37	1.83	66.08
NOV	2457.74	622.35	280.90	71.21	549.21	-	273.86	19.94	-	505.61	27.46	107.20
DEC	5218.32	2945.78	466.43	195.06	244.90	477.23	167.69	21.30	383.21	18.38	14.15	284.19
TOTAL	26431.57	9932.40	4476.98	884.82	2555.99	2423.69	1398.03	1042.91	1778.88	776.65	225.09	936.13



## TOTAL ANNUAL COST



## Yearly Operating Costs

YEAR	M.G.TREATED	TOTAL COST	COST PER MILLION GALLONS	COST PER LB OF BOD REMOVED
1964	184.25	\$18,422.16	\$99.98	12.5 cents
1965	214.87	19,519.53	90.84	5 cents
1966	233.76	19,154.53	81.94	5 cents
1967	405.32	22,513.98	55.55	3 cents
1968	466.88	26,431.57	56.61	4 cents

## **Process Data**

The probability of flows graph indicates that the flow to the plant was 1.25 mgd half of the time, and exceeded the design flow of one mgd about 88 percent of the time.

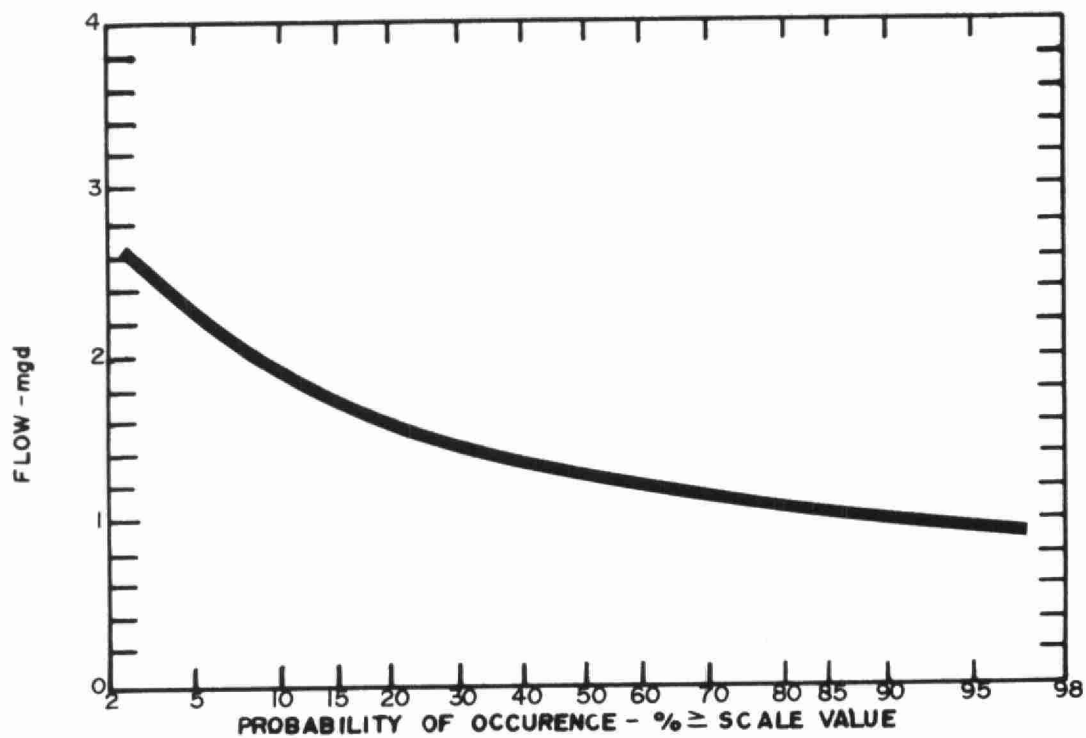
## PLANT FLOWS and CHLORINATION

MONTH	TOTAL FLOW mg	AVERAGE DAILY FLOW mg	MAXIMUM DAILY FLOW mg	MINIMUM DAILY FLOW mg	CHLORINE USED 10 <sup>3</sup> lbs.	DOSAGE mg/l
JAN	32.91	1.06	1.39	.74	1.23	3.7
FEB	36.45	1.26	3.78	.71	1.17	3.2
MAR	45.06	1.45	2.39	.91	1.11	2.5
APR	32.83	1.09	1.84	.48	1.20	3.6
MAY	41.23	1.33	2.65	.68	1.23	3.0
JUN	47.79	1.59	2.99	.84	1.20	2.5
JUL	35.35	1.18	1.96	.84	1.29	3.6
AUG	29.34	.95	1.53	.66	1.28	4.4
SEPT	37.98	1.27	2.09	1.20	1.31	3.4
OCT	35.42	1.14	2.21	.84	1.36	3.8
NOV	44.57	1.49	3.58	.89	1.28	2.9
DEC	47.95	1.55	2.93	1.00	1.05	2.2
TOTAL	466.88	-	-	-	14.71	-
AVERAGE	-	1.27	-	-	1.23	3.2

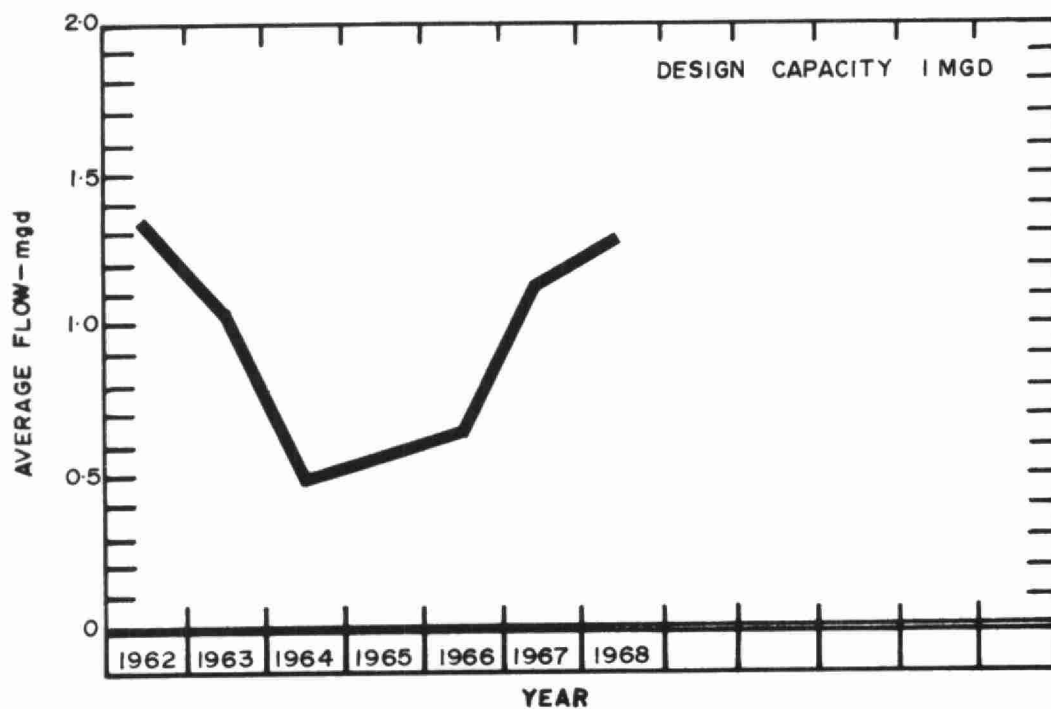
### COMMENTS

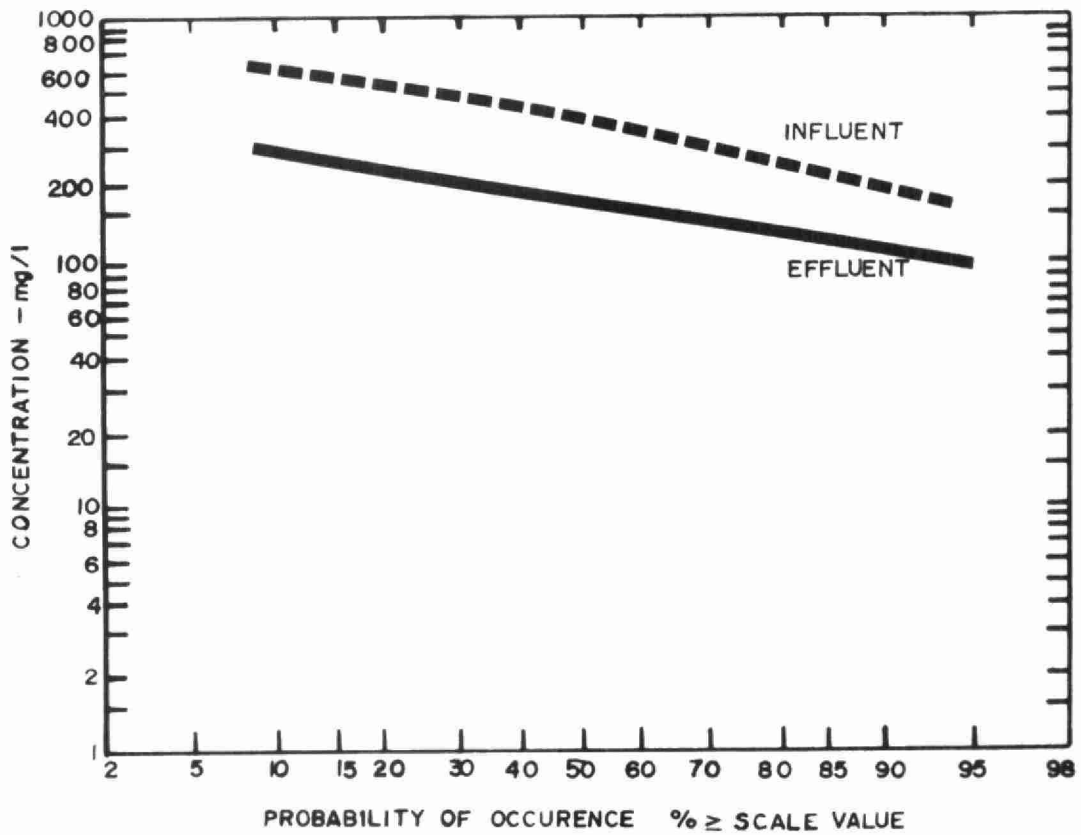
In 1968, 466 million gallons of sewage were treated. This represented an average daily flow of 1.28 million gallons per day. The maximum daily flow occurred in February, and the minimum in April.

Continuous chlorination of the plant effluent was practised, and an average of 3.2 mg/l of chlorine was required to obtain the OWRC objective of 0.5 mg/l chlorine residual after 15 minutes' contact. A total of 14,700 pounds of chlorine was used.

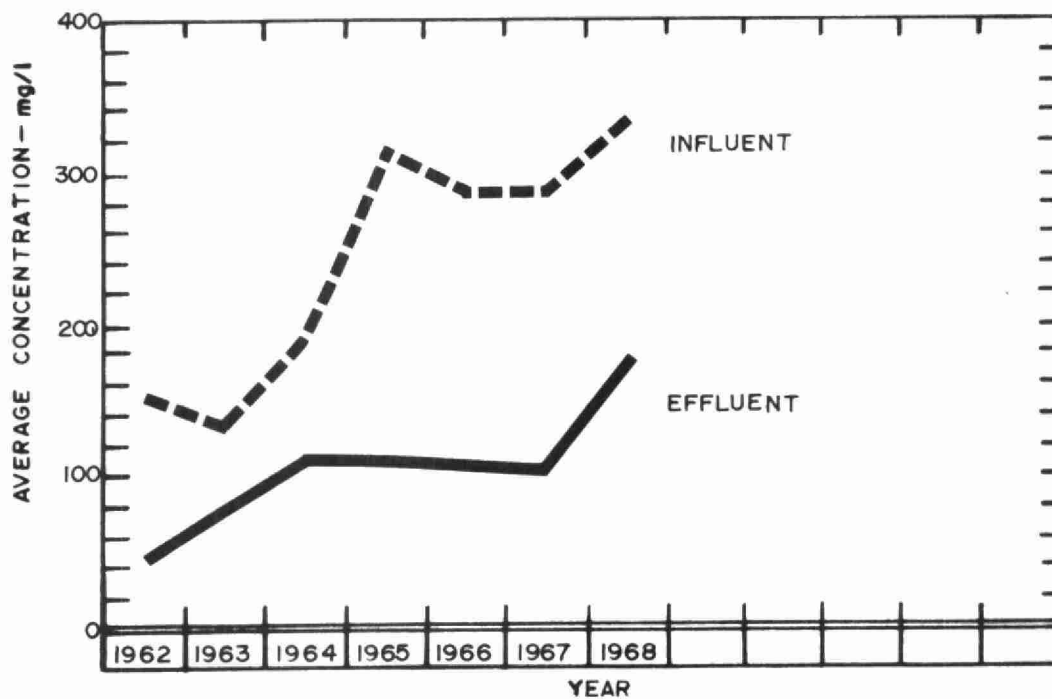


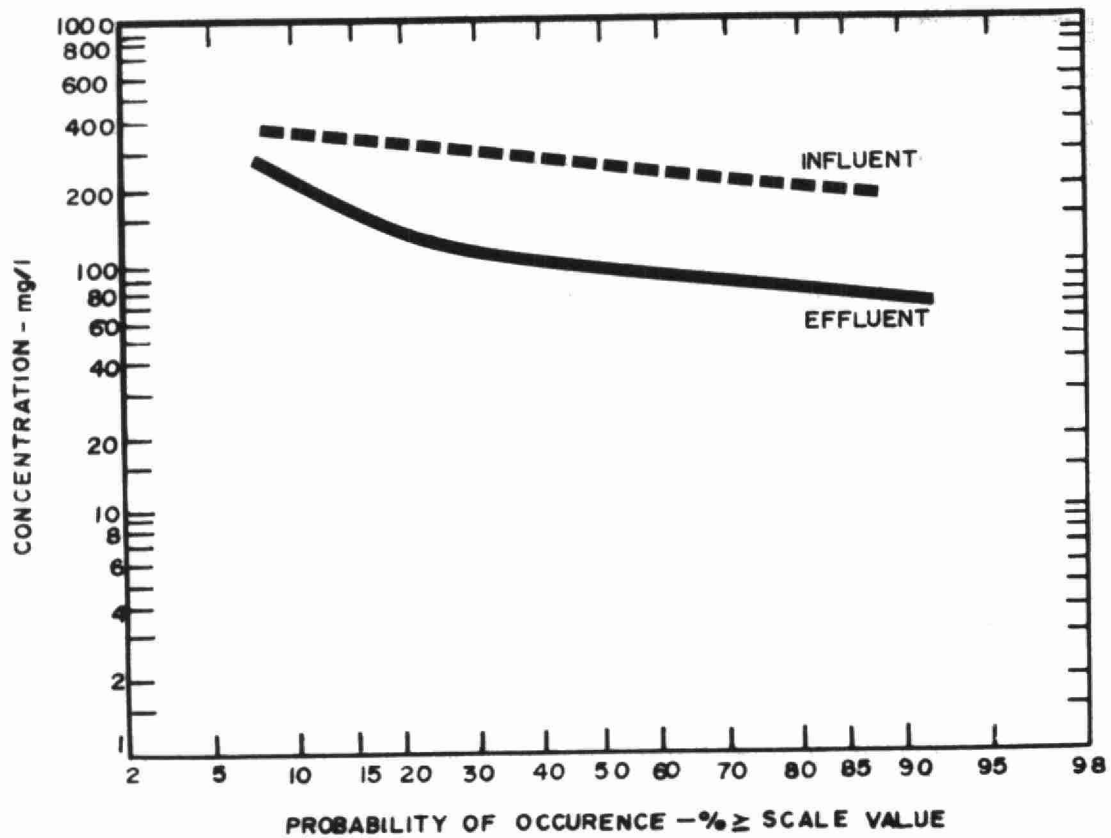
## **F L O W S**



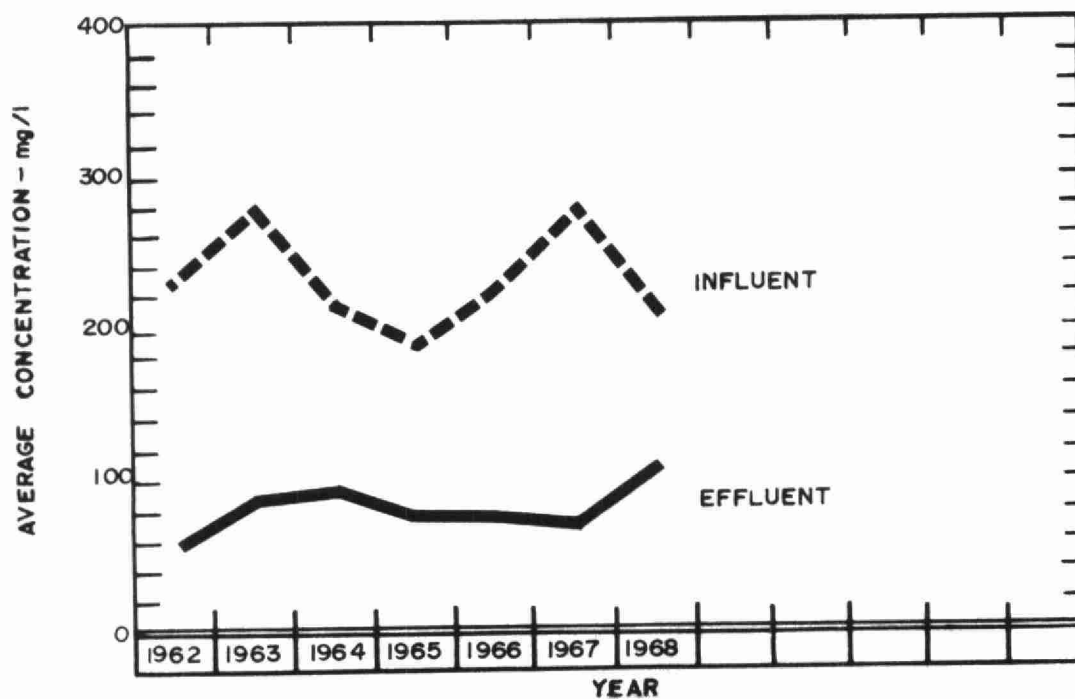


## BIOCHEMICAL OXYGEN DEMAND





## SUSPENDED SOLIDS



## PLANT EFFICIENCY

MONTH	BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				GRIT
	INF CONC <sup>N</sup> mg/l	EFF CONC <sup>N</sup> mg/l	RED <sup>N</sup> %	REMOVAL 10 <sup>4</sup> lb	INF CONC <sup>N</sup> mg/l	EFF CONC <sup>N</sup> mg/l	RED <sup>N</sup> %	REMOVAL 10 <sup>4</sup> lb	REMOVAL ft <sup>3</sup>
JAN	166	86	48	2.63	174	64	63	3.62	10
FEB	130	79	39	1.86	202	65	68	4.99	28
MAR	375	120	68	11.49	112	85	24	1.22	14
APR	410	144	65	8.73	239	88	63	4.96	15
MAY	260	170	35	3.71	284	282	1	0.08	52
JUN	245	180	26	3.11	139	68	51	3.38	33
JULY	590	530	10	2.12	235	107	54	4.52	35
AUG	410	150	63	7.63	211	116	45	2.79	10
SEPT	410	200	51	7.98	144	85	41	2.24	20
OCT	470	225	52	8.68	313	119	62	6.87	35
NOV	160	116	28	1.96	196	93	53	4.56	8
DEC	345	105	70	11.51	179	105	41	3.55	55
TOTAL	-	-	-	71.41	-	-	-	42.78	295
AVERAGE	331	175	47	5.95	202	107	47	3.56	24

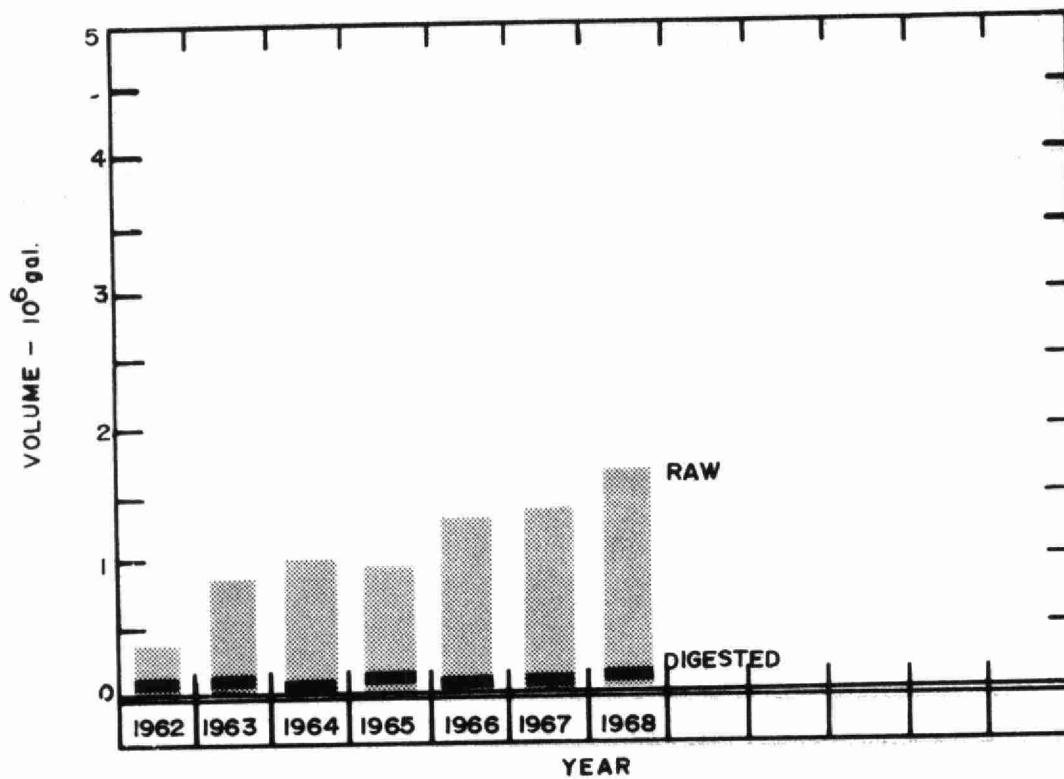
### COMMENTS

The concentrations of the BOD and suspended solids in the raw waste in 1968 were 331 and 202 mg/l respectively. The results were obtained from composite samples gathered in Trenton and submitted to the OWRC Laboratory for analyses. The strength of the waste increased slightly.

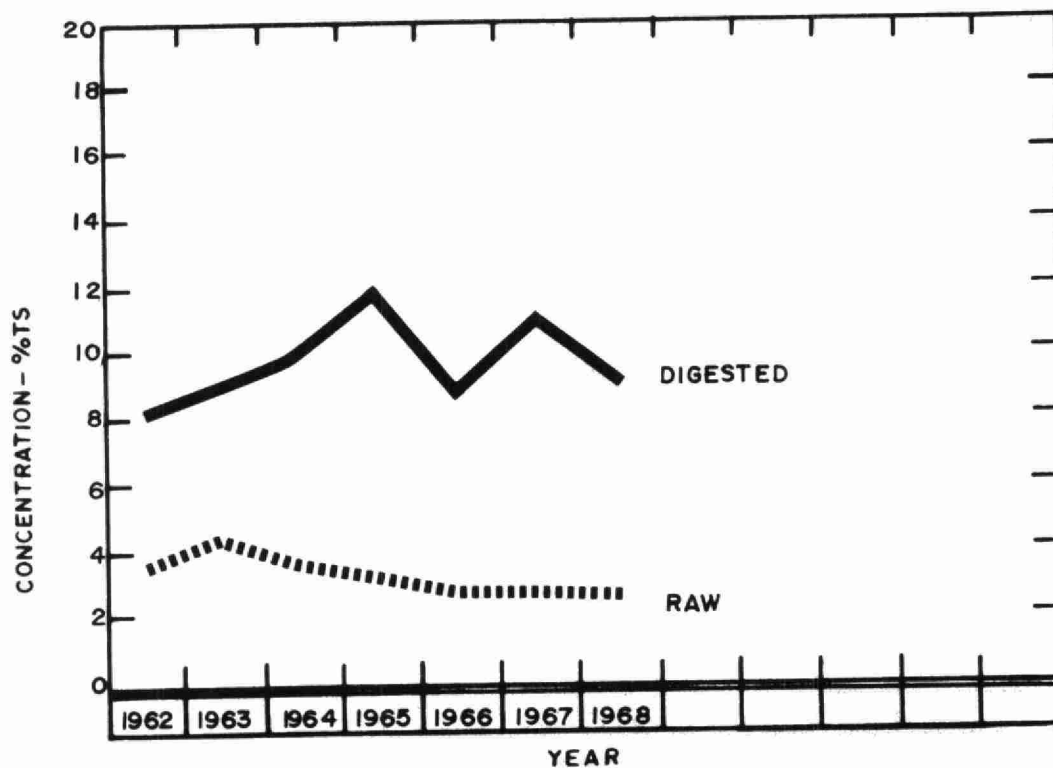
The BOD and suspended solids in the plant effluent were 175 and 107 mg/l respectively. This represents a reduction in BOD and suspended solids of 47 percent each. The results were acceptable for a primary treatment plant.

In 1968, 295 cubic feet of grit were removed, 0.6 cubic feet per million gallons.





## DIGESTION



## SLUDGE DIGESTION and DISPOSAL

MONTH	RAW SLUDGE			DIGESTED SLUDGE			SUPERNATANT		SLUDGE DISPOSAL	
	VOLUME 10 <sup>4</sup> gal	T. S. %	V. S. %	VOLUME 10 <sup>4</sup> gal	T. S. %	V. S. %	VOLUME 10 <sup>4</sup> gal	T. S. %	LIQUID yd <sup>3</sup>	DEWATERED yd <sup>3</sup>
JAN	11.2	3.1	71	0.60	4.9	-	-	-	-	-
FEB	11.8	1.7	-	0.80	6.5	-	-	-	-	-
MAR	12.6	2.0	-	1.80	7.8	-	-	-	-	-
APR	12.2	1.7	-	1.05	4.4	-	-	-	-	-
MAY	12.6	2.5	-	0.00	10.5	-	-	-	-	-
JUN	15.6	-	-	0.60	-	-	-	-	-	-
JUL	16.4	2.8	-	0.00	14.3	-	1.53	.3	-	-
AUG	16.8	3.5	-	1.30	8.0	-	12.75	-	-	-
SEPT	15.6	2.1	-	3.45	-	-	15.30	-	-	-
OCT	16.3	-	-	0.00	-	-	15.81	-	-	-
NOV	15.6	3.7	-	0.71	19.5	-	15.40	.013	-	-
DEC	16.3	4.4	-	0.00	8.4	-	15.55	.008	-	-
TOTAL	173.0	-	-	10.31	-	-	-	-	-	-
AVERAGE	14.4	2.8	71	0.86	9.4	-	12.72*	.107	-	-

\* 6 month data

### COMMENTS

In 1968, a total of 1,730,000 gallons of raw sludge was pumped to the digesters at an average solids concentration of 2.8%. A total of 103,100 gallons of digested sludge was pumped from the digesters at an average solids concentration of 9.4%.

The concentration of both the raw and digested sludge are satisfactory.

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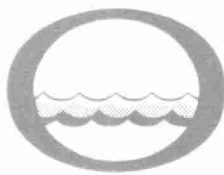
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## CONCLUSIONS

In April of 1968, authorization was given for the preparation of an engineering report to review the sewer collection facilities and plant in the Town of Trenton. The report should be completed for presentation early in 1969.

Date Due


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*Water management in Ontario*